WHAT IS CLAIMED IS:

1. A method comprising:

providing a substrate that transmits light having wavelengths of about 100 nm to about 300 nm;

forming an amorphous isotropic layer on the substrate, which transmits the light at wavelengths in the ranges without substantial attenuation of the light;

patterning the layer; and

removing a portion of the layer from regions of the substrate based on the patterning, such that a diffraction element is formed.

2. The method of claim 1, further comprising making the substrate from barium fluoride.

3. The method of claim 1, further comprising making the substrate from calcium fluoride.

4. The method of claim 1, wherein the forming step comprises forming the layer from silicon dioxide.

5. The method of claim 1, wherein the removing step comprises using a material that only removes the portions of the layer.

6. The method of claim 1, wherein the substrate acts as a stop to control a thickness of the layer.

7. The method of claim 1, wherein the providing step comprises providing the substrate having a thickness of about 1 mm to about 6 mm.

8. The method of claim 1, wherein the forming step comprises forming the layer to a thickness of about 100 nm to about 300 nm.

9. A diffraction element configured to transmit light having a wavelength in about a nanometer range comprising:

a substrate allowing relatively low attenuation of the light during transmission; and

an amorphous isotropic structure pattered on a surface of the substrate.

10. The diffraction element of claim 9, wherein the substrate comprises calcium fluoride.

11. The diffraction element of claim 9, wherein the substrate comprises barium fluoride.

12. The diffraction element of claim 9, wherein the pattern is formed from a silicon dioxide layer.

13. The diffraction element of claim 9, wherein the small wavelengths of light are about 100 nm to about 300 nm.

14. The diffraction element of claim 9, wherein the light is about one of extreme ultra violet, deep ultra violet, and vacuum ultraviolet range.

15. A lithography system configured to pattern substrates with light having a wavelength of about a nanometer range, the lithography system including a diffraction element made of a material that transmits the light, the diffraction element comprising:

a substrate allowing relatively low attenuation of the light during transmission; and

an amorphous isotropic structure pattered on a surface of the substrate.

16. The lithography system of claim 15, further comprising an illumination system, wherein the diffraction grating is located in the illumination system.

17. A method of forming a diffraction element that transmits light having a wavelength in a nanometer range comprising:

providing a substrate;

forming an amorphous isotropic layer on the substrate;

forming a resist layer on the amorphous isotropic layer;

patterning the resist layer;

removing a portion of the resist layer based on the patterning;

patterning the amorphous isotropic layer based on the previous patterning step; and

removing a remaining portion of the resist layer.

18. A method of forming a diffraction element that transmits light having a wavelength in a nanometer range comprising:

providing a substrate;

forming a resist layer;

patterning the resist layer;

removing a portion of the resist layer based on the patterning;

forming an amorphous isotropic layer on the patterned resist layer;

polishing the amorphous isotropic layer; and

removing a remaining portion of the resist layer.

19. The method of claim 1, wherein the patterning step comprises:
forming a resist layer on the layer;
exposing a pattern onto the resist layer;
removing a portion of the resist layer based on the exposing;
removing a portion of the layer based on the pattered resist layer; and
removing a remaining portion of the resist layer.

20. The method of claim 1, wherein the forming step comprises forming the layer to a thickness substantially equal to the wavelength of the light.

21. The method of claim 1, wherein the providing step provides an optical element as the substrate.

22. The method of claim 1, wherein the providing step provides a lens as the substrate.

23. The method of claim 1, wherein the providing step provides a mirror as the substrate.